

2.3

Solving Rational & Radical Equations in One Variable

Name _____ Date _____ Period _____

Solve the equation algebraically. State the restrictions on 1-26 and identify any extraneous solutions. Show work!

$$1. \frac{x-2}{3} + \frac{x+5}{3} = \frac{1}{3}$$

$$2. x+5 = \frac{14}{x}$$

$$3. x + \frac{4x}{x-3} = \frac{12}{x-3}$$

$$4. x + \frac{10}{x} = 7$$

$$5. x + \frac{12}{x} = 7$$

$$6. 2 - \frac{1}{x+1} = \frac{1}{x^2+x}$$

$$7. \frac{3x}{x+5} + \frac{1}{x-2} = \frac{7}{x^2+3x-10}$$

$$8. \frac{x-3}{x} - \frac{3}{x+1} + \frac{3}{x^2+x} = 0$$

$$9. \frac{3}{x+2} + \frac{6}{x^2+2x} = \frac{3-x}{x}$$

$$10. \frac{2}{x-1} + x = 5$$

$$11. \frac{x^2-2x+1}{x+5} = 0$$

$$12. \frac{4x}{x+4} + \frac{5}{x-1} = \frac{15}{x^2+3x-4}$$

Solve each radical equation. State the restrictions on #1-26. Show work!

13. $\sqrt{4x+1}-5=0$

14. $3\sqrt{x}+3=15$

15. $\sqrt{2x+3}-7=0$

16. $\sqrt{4x-23}-3=2$

17. $5-2\sqrt{x}=3$

18. $-\sqrt[3]{x}+3=0$

19. $\sqrt[3]{x}+3=2$

20. $\sqrt[4]{2x-5}-3=0$

21. $2\sqrt[5]{31x+25}-7=3$

22. $6\sqrt[4]{2x-7}+8=32$

23. $\sqrt{x^2+3}=x+1$

24. $\sqrt{x-6}=x-6$

$$25. \sqrt{5x+4} - \sqrt{x} = 4$$

$$26. \sqrt{3-x} = 3 - \sqrt{x+2}$$

$$27. 2(x+3)^{\frac{2}{3}} = 8$$

$$28. 3(x-2)^{\frac{3}{4}} = 24$$

$$29. (x+1)^{\frac{3}{2}} - 2 = 25$$

$$30. (x+3)^{\frac{1}{2}} - 1 = x$$

$$31. (2x)^{\frac{1}{2}} = (x+5)^{\frac{1}{2}}$$

$$32. 2(x-1)^{\frac{4}{3}} + 4 = 36$$

$$33. (x-4)^{\frac{2}{3}} = 5$$

$$34. 2(2x)^{\frac{1}{3}} + 1 = 5$$

35. Suppose that x mL of pure acid are added to 120 mL of a 62% acid solution.

a) Express the concentration $C(x)$ of the new mixture as a function of x .

b) How many mL of pure acid must be added to obtain a solution of 85% acid?